

CORRES CONTROL  
OUTGOING LTR NO

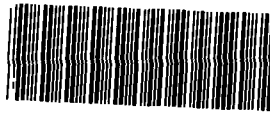
74 RF 01247



# EG&G ROCKY FLATS

EG&G ROCKY FLATS INC

ROCKY FLATS PLANT P O BOX 464 GOLDEN COLORADO 80402-0464 (303) 966 7000



January 27 1994

94 RF 01247

000022175

Jennifer L Pepe  
Environmental Restoration Management  
DOE, RFO

Attn T Reeves

PROPOSED SCOPE AND BASE PLAN FOR OPTIMIZATION TESTING/PERFORMANCE  
EVALUATION ON THE OPERABLE UNIT 1 GROUNDWATER TREATMENT SYSTEM -  
RZH 002 94

Attached are the Proposed Scope for Optimization Testing/Performance Evaluation on the Operable Unit (OU) 1 Interim Measures/Interim Remedial Action (IM/IRA) on the OU 1 IM/IRA Groundwater Treatment System Also attached is the Base Plan For Preliminary Performance Testing On The Operable Unit No 1 Interim Measure/Interim Remedial Action Ground Water Treatment System These documents were not released as controlled documents since they are not work plans All work will be performed under the OU 1 Building 891 Treatment System Scientific Notebook Plan which is a controlled document

If you have any questions regarding this correspondence please call Craig D Cowdery of Environmental Engineering and Technology at extension 6953

R Zeke Houk  
Operable Unit 1 Project Manager  
Remediation Project Management

CDC jlm

Orig and 1 cc - J L Pepe

Attachment  
As Stated

CC  
C H Brown - LATO Rocky Flats Plant

ADMIN RECORD

DIST	TR	ENC
BENEDETTI, R.L.		
BENJAMIN, A.		
BERMAN, H.S.		
BRANCH, D.B.		
CARNIVAL, G.I.		
COPP, R.D.		
DAVIS, J.G.		
FERRERA, D.W.		
HANNI, R.J.		
HARMAN, L.K.		
HEALY, T.J.		
HEDAH, T.		
HILBIG, J.G.		
KIRBY, W.A.		
KUESTER, A.W.		
LEE, E.M.		
MANN, H.P.		
MARX, G.E.		
MCDONALD, M.M.		
MCKENNA, F.G.		
MONTROSE, J.K.		
MORGAN, R.V.		
POTTER, G.L.		
PIZZUTO, V.M.		
RILEY, J.H.		
SANDLIN, N.B.		
SHEPLER, R.L.		
STEWART, D.L.		
SULLIVAN, M.T.		
SWANSON, F.R.		
WILKINSON, R.B.		
WILLIAMS, S. (ORC)		
WILSON, J.M.		
ZANE, J.O.		
CIRILLO, R.	X	
COWDERY, C.	X	
CRONHEIMER, M.	X	
HOUK, Z.	X	
McLaughlin, R.	X	
Andrzej, J.M.	X	
FILE	X	X
ADMIN REC	X	X
ENVIRONMENTAL (E)	X	X
CORRES CONTROL	X	X
CLASSIFICATION		
UCN		
UNCLASSIFIED	X	
CONFIDENTIAL		
SECRET		
AUTHORIZED CLASSIFIER SIGNATURE		
DOCUMENT CLASSIFICATION REVIEW W/VER PER CLASSIFICATION OFFICE		
TE		
N REPLY TO RFP CC NO		
ACTION ITEM STATUS		
<input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED		
<input type="checkbox"/> RTIA		
TR APPROVALS		
X C H B RZH		
ORIG & TYPIST INITIALS		
CDE jlm		

**Proposed Scope For**  
**Optimization Testing/Performance Evaluation**  
**On The Operable Unit No 1**  
**Interim Measure/Interim Remedial Action**  
**Ground Water Treatment System**

**I Introduction**

The Operable Unit No 1 (OU 1) Interim Measure/Interim Remedial Action (IM/IRA) at the Rocky Flats Plant intercepts alluvial groundwater from the 881 Hillside pumps it to a water treatment system treats the ground water and then discharges it to the South Interceptor Ditch. The OU 1 IM/IRA groundwater treatment system consists of an ultraviolet/hydrogen peroxide (UV/H<sub>2</sub>O<sub>2</sub>) process unit and an ion exchange process unit. The UV/H<sub>2</sub>O<sub>2</sub> process is designed to reduce concentration of organics through destruction of organic constituents. The ion exchange process is designed to remove inorganics and radionuclides from the water.

The treatment facility has been in operation for approximately a year and a half. During startup and operation of the facility a series of tests were conducted to test the system performance and to optimize the system for the treatment of groundwater from the 881 Hillside area. These tests were hampered to some extent by contaminant concentrations that were significantly lower than those originally estimated in design documents. In some cases these differences were two or three orders of magnitude.

**II Objectives**

The following objectives are integral parts of this test/evaluation:

- ◆ **Characterization/Evaluation of Ground Water Sources Currently Being Recovered** This would require collecting existing data in a form that would be amenable to data analysis and evaluation. The three sources currently being treated are the French drain, a recovery well to the north of the French drain and the footing sump of Building 881. Once in a form that would be amenable to data analysis and evaluation, the sources could be evaluated in terms of whether IM/IRA operations are effectively remediating the sources and evaluating whether further remediation is required at a given source. Meeting this objective could also require additional sampling to fill in gaps in the analytical data matrix.

- ◆ **Characterization/Evaluation of Treatment System Influent Water** This will require yet to be identified data collection and evaluation
- ◆ **Optimization Testing and Performance Evaluation of the UV/H<sub>2</sub>O<sub>2</sub> Treatment Unit** Operating characteristics of the UV/H<sub>2</sub>O<sub>2</sub> system need to be known in advance should the system be utilized to handle different water sources or should concentrations at existing sources increase This would require evaluating the system performance by treating water containing higher concentrations of volatile organic compounds than the groundwater already being treated at the facility It would also include identifying and correcting deficiencies in the operation of the UV/H<sub>2</sub>O<sub>2</sub> system
- ◆ **Optimization Testing and Performance Evaluation of the Ion Exchange Treatment Unit** This would require reevaluating the system performance since startup It would also require identifying and correcting problems and deficiencies in the operation of the ion exchange system These problems include elevated iron concentrations in the effluent problems with the pH of the effluent frequently measured at levels outside of the control range and problems associated with regeneration including cations being flushed back into the clean water tank
- ◆ **Development and Implementation of a Computer Based Data Management System** This would include developing a system to support other characterization and evaluation objectives current reporting requirements and real time data analysis
- ◆ **Reevaluation of the Sampling Requirements** This objective requires the evaluation of operational sampling requirements relative to reporting requirements process evaluation and regulatory requirements
- ◆ **Development of Test Plans for Other Sources of Water** This would include water from various parts of the plant including other operable units that could potentially have contaminants or characteristics different from the design basis of the treatment system

### **III Scope Definition**

It is proposed that the initial approach to meeting the objectives comprise of three main activities development of a data management system development of test plans and reevaluation of sampling requirements

#### **A) Development of a Data Management System**

**Scope** The data management system would consist of a dedicated IBM

model computer utilizing a relational database. The database would be capable of managing all data generated by the treatment process. What data would go into the database would be determined during the developmental process. It is proposed that the database have the following capabilities:

- o Direct transfer of data from the Rocky Flats Environmental Database System
- o The ability to handle data from real time analytical monitoring equipment
- o Creates customized graphs, tables and reports, in particular, the ability to generate tables for the quarterly reports on the IM/IRA
- o Supports other characterization and evaluation objectives
- o Performs statistical analysis on the data
- o Utilizes data entry forms for chemical operators to input the data
- o A user friendly format for routine operations

The following activities are expected to be undertaken as part of the development of this database:

- o Selection of the database system including hardware and software
- o Design of the database system including form, report, and data table development
- o Data entry of historical information

**Funding** It is proposed that this work be performed by the Los Alamos Technology Office (LATO) in Fiscal Year 1994 (FY 94). It is proposed that the funding for LATO be provided under an existing contract that LATO has with the Department of Energy. It is proposed that LATO provide turnkey development of the database system. Funding for the computer should be provided by OU 1 IM/IRA Operation and Maintenance Work Package. It is possible that this will need to come out of change control. An estimate of the cost and labor hours to achieve each objective is attached.

**Schedule** It is proposed that this task be completed in FY 94. A more detailed schedule will be needed to finalize commitment dates.

**B) Preparation of Test Plans**

**Scope** The scope of test plan preparation would cover three areas requiring evaluation: source/influent characterization and evaluation performance evaluation/optimization of the treatment system (UV/hydrogen peroxide unit and the ion exchange unit) and a test plan for the treatment of water from new sources. Each of the test plans would be independent to allow for flexibility in their implementation.

**Source/Influent Characterization Test Plan** This test plan would consist of identifying objectives, identifying sampling requirements, and developing a sampling plan. It is assumed that any form of data analysis or risk assessment would be outside the scope of this activity. The test plan would include assessment work to add or remove sources of water from the treatment system and characterization work to better define treatment requirements.

Estimated length: 3 to 5 pages

**Performance Evaluation/Optimization of the Treatment System** This test plan would consist of identifying objectives, developing an approach to meeting test goals, identifying sampling requirements, and developing sampling, testing, and reporting plans.

The following areas would be addressed in this plan:

- o Performance evaluation of treatment system since start up
- o Evaluation of reconfiguration of UV/Hydrogen peroxide unit
- o Investigation of iron problems
- o Evaluation of acid usage to meet new waste minimization goals
- o Investigation of pH problems of ion exchange
- o Investigation of rinse/clean water tank problems
- o Evaluation of resin selection/replacement including waste issues associated with resin use and disposal
- o Evaluation of process changes to accommodate other water sources i.e. prefiltration, recycle piping modifications

- o Splitting streams on the ion exchange unit
- o Determining whether to evaluate treatment for plutonium and americium
- o Evaluating the effect of contaminant loading outside of the design parameters road salt high suspended solids loadings and other problems

As part of the preparation of this test plan some ongoing process problems will need to be evaluated prior to preparation of certain test plans in particular pH problems in the ion exchange system problems with high iron in the effluent and problems with the rinse cycle of ion exchange columns 2 and 3 If during this evaluation solutions to these problems which are easily executed then they will be implemented prior to preparation of the individual test plans More costly or involved solutions shall be incorporated into the appropriate test plan

It is suggested that the following actions be taken prior to test plan preparation

- o Supply vendors with previous analytical results and get input on changes in process operations such as modifying regeneration cycle
- o Perform additional sampling for iron (see reevaluation of sampling requirements)
- o Perform water analysis on clean water tank and tap water
- o Treat water from an outside source that is high in volatiles

Estimated length 10 20 pages

#### **Test (Contingency) Plan for the Treatment of Water from New Sources**

This test plan would describe the strategy for handling water from new sources including acceptance criteria modifications to the system operating parameters and modifications to any standard operating procedures It is suggested that this eventually lead to a computer based expert system that would determine what waters could be accepted what steps should be taken to adjust the system to handle those waters and any additional safety requirements

Estimated length 2 5 pages

**Funding** It is assumed that the bulk of this work would be performed by EG&G Environmental Engineering and Technology (EE&T) Funding within the OU 1 Operation and Maintenance Work Package will need to be examine to determine whether these activities are within the original scope schedule and budget If not Change Control could be petitioned An estimate of the cost and labor hours to achieve each objective is attached

**Schedule** If all relevant parties agree upon the scope and a budget is in place then this work is tentatively planned for completion in Fiscal Year 1995

**C) Reevaluation Of Sampling Requirements**

**Scope** This activity consists of evaluating current routine sampling requirements to determine whether the needs of the system are being met and whether cost savings can be made by eliminating nonessential sampling A draft sampling table currently exists The remainder of this activity consists of reviewing the existing table and finalizing it

**Funding** The scope of the remainder of this activity falls within the FY 94 work package for operation and maintenance of the OU 1 IM/IRA and no additional funding is needed This activity would be completed by EG&G Facility Operations Management who also prepared the draft routine sampling schedule An estimate of the cost and labor hours to achieve each objective is attached

**Schedule** This activity is tentatively scheduled for completion in early FY 94

## **Rough Cost Estimate for Meeting Objectives of**

### **Optimization Testing/Performance Evaluation**

#### **On The Operable Unit No 1**

#### **Interim Measure/Interim Remedial Action**

A more refined budget and schedule will need to be developed once the scope for FY 94 is determined and the test plans have been prepared. This estimate is just a preliminary evaluation of some of the costs for the purposes of planning and scope development. Some of the preliminary actions defined in the scope could be instrumental in refining a cost estimate.

#### **General Assumptions**

- o This estimate is rough and not intended for actual budgeting purposes
- o Assume any sampling labor is included under existing subcontract and work package
- o Assume a labor rate of \$85.00/hr for engineering activities
- o Assume that each objective is met separately. It should be noted that in some instances there would be a significant cost savings to group activities together
- o Estimate only includes test plan preparation for activities associated with treatment system optimization and evaluation

#### **1) Characterization/Evaluation of Ground Water Sources Currently Being Recovered**

	<u>Hours</u>	<u>Cost</u>
Test Plan Preparation	10	\$ 850
Samples (Assume 6 full suites + 3 Quality Assurance (QA) Samples at a cost of \$5500 each EPA 524.2 Total & Dissolved Metals, Water Quality Parameters and Total & Dissolved Radionuclides)		\$40,500
Data Evaluation	10	\$ 850
Total		\$42,200



**2) Characterization/Evaluation of Treatment System Influent Water**

	<u>Hours</u>	<u>Cost</u>
Test Plan Preparation	8	\$ 680
Samples (Assume 3 full suites + 2 QA at a cost of \$5500 each EPA 524 2 Total & Dissolved Metals Water Quality Parameters and Total & Dissolved Radionuclides)		\$27 500
Data Evaluation	10	\$ 850
Total		\$29 030

**3) Optimization Testing and Performance Evaluation of the UV/H<sub>2</sub>O<sub>2</sub> Treatment Unit**

	<u>Hours</u>	<u>Cost</u>
Test Plan Preparation	40	\$3 400

**4) Optimization Testing and Performance Evaluation of the Ion Exchange Treatment Unit** Note this objective would include evaluating problems with iron

	<u>Hours</u>	<u>Cost</u>
Test Plan Preparation	70	\$5 950

**5) Development and Implementation of a Computer Based Data Management System**

	<u>Hours</u>	<u>Cost</u>
Time Requirements	500 (1/3 FTE)	\$42 500
Computer with sufficient storage capacity		\$ 8 000
Software		\$ 600
Total		\$ 51 100

**6) Reevaluation of the Sampling Requirements**

	<u>Hours</u>	<u>Cost</u>
Time Requirements	20	\$ 1 700

**7) Development of Test Plans for Other Sources of Water**

	<u>Hours</u>	<u>Cost</u>
Test Plan Preparation	60	\$5 100

**Suggested Approach to Funding**

- 1) Use 1/3 FTE of LATO funding for database
- 2) Use remaining 1/6 FTE for technical input on work plan development and data evaluation
- 3) Use hours for Environmental Engineering & Technology (EE&T) Support to do the test plans. It should be noted that the 500 hours in the Work Package for EE&T also includes activities outside this scope. These activities include R. T. Reiman's time for characterizing the in line gamma spectrometer and an EE&T engineer's time for process engineering support and for finishing a test report.
- 4) Upon completion of test plans, evaluate the cost for implementing each portion so that a determination can be made for what activities to perform in FY 94.
- 5) If the existing work package can cover funding, proceed to
  - o Perform evaluation of iron problem
  - o Take water samples from clean water tank and clean water tap
  - o Perform some limited testing on water from other sources and
  - o Obtain vendor input on system operation

**Base Plan For Preliminary Performance Testing  
On The Operable Unit No 1  
Interim Measure/Interim Remedial Action  
Ground Water Treatment System**

**January 20 1994**

## **I Introduction**

In preparation for further performance evaluation and optimization testing of the Operable Unit No. 1 (OU 1) Ground Water Treatment System a series of preliminary activities will be performed to gather and analyze data. This work is an augmentation to the routine operation of the treatment system. All work shall be conducted in accordance to the existing health and safety plan, scientific notebook plan and standard operating procedures (1992a). All results and evaluation conclusions will be included in one of the quarterly reports for the OU 1 Interim Measure/Interim Remedial Action (IM/IRA) Treatment Facility. Quality assurance samples will be taken in accordance to the current approved Sampling And Analysis Plan for the treatment system, either Appendix C of the Work Plan for Startup and Operation and Maintenance of the IM/IRA for the 881 Hillside OU 1 (DOE 1992a) or a more recent plan if one is approved.

## **II Vendor Input On Ion Exchange Unit Operation**

The objective of this activity is to garner vendor input on the operation of the ion exchange (IX) system and to make modifications to operating parameters. This activity consists of supplying ion exchange resin manufacturers and the manufacturer of the ion exchange treatment unit with analytical data and performance data on the treatment system to make modifications in operating parameters or in the type of ion exchange resin. This is geared primarily towards eliminating the pH fluctuations in the effluent and problems with the rinse cycle after regenerating the second and third ion exchange columns. The information to be sent to the vendors will include analytical data on the removal of ions and radionuclides across the ion exchange system, pH data, and resin types. Any process improvements will be documented in one of the quarterly reports for the OU 1 Interim Measure/Interim Remedial Action (IM/IRA) Treatment Facility.

## **III Iron Sampling And Evaluation**

The objective of this activity is to isolate the source of iron in the system and to determine whether the ion exchange system is effectively removing iron. A key to this evaluation will be whether or not the iron is being precipitated out in the process units. Samples for total dissolved iron will be taken at the influent to the IX system, the effluent of the second IX column, the effluent of the degassifier, and the effluent of the third ion exchange column. Sampling will be performed in conjunction with routine influent sampling. If precipitation is occurring in a process unit then additional sampling will be performed to

measure oxidation potential in the influent and effluent to that unit All sampling will be documented in the scientific notebook

#### **IV Clean Water Tank/Regeneration Cycle Sampling**

The object ve of this activity is to evaluate precipitation and pH problems with the clean water tank Of primary concern is the possibility that metals ions removed in IX columns two and three are being flushed into the clean water tank during the fast rinse cycles Also of concern is whether ions in the make up water are impacting the regeneration of the IX column This activity would consist of sampling the make up water and the effluent from the first and second rinses of IX column two for pH dissolved metals and water quality parameters (steps 5 and 7) pH measurements will also be made on the rinse water from IX column four (steps 10 and 11) and the backwash coming out of IX 2 IX 3 and IX 4 All step numbers refer to the steps of the sixteen step automated regeneration cycle

The results will be used to determine whether the regeneration cycle can be modified During the rinse cycles pH samples will be taken every 5 minutes to determine how much rinse water is needed The rinse cycles remove excess acid and base from the column therefore by taking ph measurements at five minute intervals the optimal duration of the rinse water can be determined An evaluation of utilizing the treatment system effluent for make up water will also be made The sampling requirements are given in Table I All sampling events refer to a single analytical sampling event with unless otherwise noted Analytical parameters and methodology is given in the Sampling And Analysis Plan (DOE 1992a) A more current sampling plan will be used if it is available at the time of the test

#### **V Testing of Ultraviolet/Hydrogen Peroxide Unit At Higher Volatile Concentrations**

The objective of this activity is to evaluate the Ultraviolet/Hydrogen Peroxide (UV/H<sub>2</sub>O<sub>2</sub>) treatment unit at volatile organic concentrations higher than those collected to date from the french drain to determine the limits of the system This test would be preferentially performed on water with concentrations high in single bonded chlorinated solvents such as 1 1 1 trichloroethane or carbon tetrachloride The source of this water will be incidental waters from a building footing drain or a surface water collection area A secondary source of water could be the OU 2 Subsurface Interim Remedial Action or the Decontamination Pad at the east end of the Environmental Operations Yard An acceptable source water would have chlorinated solvents in the range of 500 to 5000 parts per billion

**Table I**

**Regeneration Water Sampling**

<u>Location</u>	<u>Sample Port</u>	<u>Regeneration Step</u>	<u>Chemical Parameters</u>
Domestic Water (tap water)	Any Tap	0	pH dissolved metals water quality parameters
Tank 204 (make up water)	From Tank	0	pH dissolved metals
IX 3 Backwash	Valve V 35	1	pH 5 minutes into cycle
IX 2 Backwash	Valve V 35	2	pH 5 minutes into cycle
IX 3/IX 2 Displacement Rinse	9	5	dissolved metals pH every 5 minutes
IX 3 Fast Rinse	Valve V 35	6	dissolved metals pH every 5 minutes
IX 2 Fast Rinse	Valve V 35	7	dissolved metals pH every 5 minutes
IX 4 Backwash	Valve V 35	8	pH 5 minutes into cycle
IX 4 Displacement Rinse	13	10	pH every 5 minutes
IX 4 Fast Rinse	Valve V 35	11	pH every 5 minutes

For sample locations with the exception of V 35 refer to the Final Systems Operation And Optimization Test Report Interim Measure/Interim Remedial Action For The 881 Hillside Operable Unit 1 November 1992 V 35 is located at the base of the bag filter (BFL 2) on the backwash line to Tank 204

Once a suitable water has been located additional effort will be necessary to ensure that the volatiles remain in the water. This would include minimizing the head space in tankers and making an extra effort not to agitate the water. One of the two existing influent tanks would need to be drained of french drain water to minimize dilution. Treatment will need to be started as soon as possible without negatively impacting regular operations.

Prior to treating the water the hydrogen peroxide concentration will be increased to approximately 100 milligrams/liter. The test will be conducted at a flow rate of 10 gallons per minute. After approximately 12 minutes (the residence time of both reactors) the residual concentration of hydrogen peroxide will be measured using test strips. Adjustments to the hydrogen peroxide flow rate should be made until the residual hydrogen peroxide level in the UV/H<sub>2</sub>O<sub>2</sub> unit's effluent is approximately 2 milligrams/liter. After another 12 to 24 minutes samples will be taken from the unit's influent and effluent to be analyzed for volatile organic compounds as delineated in the Sampling And Analysis Plan (DOE 1992a). This information will be evaluated against the treatment requirements given in the OU 1 Interim Measures/Interim Remedial Action Plan And Decision Document 881 Hillside Operable Unit 1 (DOE 1990).

## **VI Evaluation of Water Samples From Neutralization Tank**

The purpose of this activity is to use the analytical results from the neutralization tank to evaluate the ion exchange system's performance. No additional sampling will be required since the neutralization tank must be sampled every thirty volumes. The results will be qualitatively evaluated to determine what species are being removed from the ion exchange resins.

## **VII Evaluation of Overall Water Balance**

This activity consists of conducting an overall mass balance on the water streams flowing in and out of the system. This activity is contingent on repairs to the flow meter at the 881 footing drain. These results will be evaluated and if there are discrepancies in the mass balance that can not be accounted for then additional balances or measurements will be performed to determine the source of these discrepancies.

## **VIII Test Report**

Upon completion of all activities discussed an internal test report will be prepared detailing the results. This report will also give recommendations on improving system performance or performing additional tests. In addition test results will be included in one of the quarterly reports for the OU 1 Interim Measure/Interim Remedial Action (IM/IRA) Treatment Facility.

## **IX Schedule**

The schedule for preliminary testing is presented in Table II. Subsequent testing will be scheduled in future test plans.



**Table II**

**Schedule For Preliminary Performance Testing  
On The Operable Unit No 1  
Interim Measure/Interim Remedial Action  
Ground Water Treatment System**

<b>Activity</b>	<b>Date</b>
<b>Vendor Input On Ion Exchange Unit Operation</b>	
Prepare information package for vendors	Complete February 15 1994
Collate vendor input	3 weeks after all vendor information is received
<b>Iron Sampling And Evaluation</b>	
Sampling (not including analytical turnaround time)	Complete by March 15 1994
Evaluation of the results	Complete 3 weeks after receipt of the results
Documentation of results	Complete 5 weeks after receipt of results
<b>Clean Water Tank/Regeneration Cycle Sampling</b>	
Sampling (not including analytical turnaround time)	Complete by March 15 1994
Evaluation of results	Complete 3 weeks after receipt of results
Documentation of results	Complete 5 weeks after receipt of results
<b>Testing of Ultraviolet/Hydrogen Peroxide Un At Higher Volatile Concentrations</b>	
Sampling (not including analytical turnaround time)	Dependent on availability of contaminated waters and feasibility of test at any given time
Evaluation of results	Complete 3 weeks after receipt of results
Documentation of results	Complete 5 weeks after receipt of results

**Table II**

**Schedule For Preliminary Performance Testing (Continued)**

<b>Activity</b>	<b>Date</b>
<b>Evaluation of Water Samples From Neutralization Tank</b>	
Sampling to be scheduled in conjunction with regeneration sampling	Complete by March 15 1994
Evaluation of results	Complete 3 weeks after receipt of results
Documentation of results	Complete 5 weeks after receipt of results
<b>Evaluation of Overall Water Balance</b>	
Evaluation of Water Balance	Completed by May 15 1994
Documentation of Results	Completed by June 15 1994
<b>Preliminary Performance Test Report</b>	
Draft Test Report	Completed 4 weeks after completion of all tests

---

## **References**

**DOE 1990** United States Department of Energy *Interim Measures/Interim Remedial Action Plan And Decision Document 881 Hillside Operable Unit 1* Rocky Flats Plant Golden Colorado January 1990

**DOE 1992a** United States Department of Energy *Work Plan Manual for the Startup Operation and Maintenance of the IM/IRA for the 881 Hillside Operable Unit No 1* Rocky Flats Plant Golden Colorado November 1992 Manual No 21100-WP OU01 5

**DOE 1992b** United States Department of Energy *Final Systems Operation and Optimization Test Report Interim Measure/Interim Remedial Action For The 881 Hillside Operable Unit 1* Rocky Flats Plant Golden Colorado November 1992